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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/528,069

07/10/2006

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EXAMINER

TRINH, HOA B

ART UNIT

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/528,069	<b>Applicant(s)</b> NAKAMURA ET AL.	
	<b>Examiner</b> HOA B. TRINH	<b>Art Unit</b> 2893	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 27 February 2009.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,5,6,12 and 15-21 is/are pending in the application.
- 4a) Of the above claim(s) 15-18 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,5,6,12 and 19-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

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## **DETAILED ACTION**

### ***Election/Restrictions***

1. This application contains claims 15-18 drawn to an invention nonelected with traverse in the reply filed on 8/25/2008. A complete reply to the final rejection must include cancellation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

### **Acknowledgement**

An amendment filed on 02/27/2009 has been considered and entered. Claims 2-4, 7-11, 13-14 have been canceled. New claims 19-21 are acknowledged. Claims 1, 5-6, 12, 15-21 are pending.

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

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3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takehiro et al. (2001-358086; hereinafter as Takehiro (applicant cited)) in view of Yoshikawa (JP 11-340155; applicant cited).

As to claim 1, Takehiro discloses a thermal treatment apparatus comprising a furnace (para. [0001]) for heat-treating a substrate 1 (fig. 1A) and a substrate support 10, 11 (fig. 1A) for supporting the substrate 1, wherein the substrate support 10, 11 has a main body portion 11 and a supporting portion 10 which is provided on the main body portion 11 and in contact with the substrate 1 (fig. 2B), and the supporting portion 10 (fig. 2B) or 11 (fig. 1A) is formed from a silicon platelike-member having a general thickness (abstract), the supporting portion 10 is not in contact with a periphery of the substrate 1. However, Takehiro does not teach a specific range of thickness for the substrate support being not more than 10 mm, as claimed.

Yoshikawa discloses an analogous device having a substrate support 2 having a thickness of .08-1.25mm or 1.23-1.95mm (para. 0031] which is within the claimed range for preventing a slip ([0063]).

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Thus, as to claim 1, it would have been obvious to one of ordinary skill in the art to use the substrate support teaching of Takehiro with a thickness range, as taught by Yoshikawa, for the advantage as claimed.

5. Claims 5-6, 12, 19-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takehiro in view of Yoshikawa, as applied to claim 1 above, and further in view of Satoshi (applicant cited the references).

Takehiro as modified by Yoshikawa discloses the invention substantially as claimed in claim 1 above, except a substrate-placing face being coated with an amorphous silicon oxide film on the supporting portion.

Satoshi discloses a substrate support 10 having a coated layer 14 (abstract) made of amorphous SiO<sub>2</sub>. In addition, Satoshi discloses a substrate 14 (abstract) with the substrate being supported by a substrate support 10 (abstract), wherein the substrate support 10 (abstract) has a main body portion and a supporting portion which is provided on the main body portion and in contact with the substrate, the supporting portion 10 is made of silicon (abstract), and a substrate-placing face of the supporting portion, on which the substrate 14 (abstract) is placed, is coated with a film 12 (abstract) comprising one or a plural number of materials of silicon carbide (SiC) (abstract), silicon nitride (Si<sub>3</sub>N<sub>4</sub>), amorphous silicon oxide (SiO<sub>2</sub>).

Therefore, as to claim 5, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the supporting portion of Takehiro as modified by Yoshikawa with a coated layer made of amorphous SiO<sub>2</sub>, as taught by Satoshi, because it is known in the art that the SiO<sub>2</sub> layer provides protection from damage or diffusion of impurity to

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the layer underneath. Also, the coated layer helps to prevent surface resistance on contact in the device.

Regarding claims 6 and 12, Takehiro discloses a thermal treatment apparatus comprising a furnace (para. [0001]) for heat-treating a substrate 1 (figure 1A) and a substrate support 11 (fig. 1A) for supporting the substrate 1, wherein the substrate support 11 has a main body portion (central portion) and a supporting portion 11 (side portion) which is provided on the main body portion and is not in contact with the substrate 1 (fig. 1), and the supporting portion 11 (fig. 1A) is formed from a silicon platelike-member having a general thickness larger than the thickness of the substrate 1 (abstract). However, Takehiro does not teach a specific range of thickness for the substrate support being not more than 10 mm, as claimed.

Yoshikawa discloses an analogous device having a substrate support 2 having a thickness of .08-1.25mm or 1.23-1.95mm (para. 0031] which is within the claimed range for preventing a slip ([0063]) .

Regarding to the thickness, it would have been obvious to one of ordinary skill in the art to use the substrate support teaching of Takehiro with a thickness dimension, as taught by Yoshikawa, for preventing a slip.

Regarding to the coated film, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the supporting portion of Takehiro as modified by Yoshikawa with a coated layer made of amorphous SiO<sub>2</sub>, as taught by Satoshi, because it is known in the art that the SiO<sub>2</sub> layer provides protection from damage or diffusion of impurity to the layer underneath. Also, the coated layer helps to prevent surface resistance on contact in the device.

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Regarding claim 19, Takehiro discloses a thermal treatment apparatus comprising a furnace (para. [0001]) for heat-treating a substrate 1 ( fig. 2B) and a substrate support 4 (fig. 2B) for supporting the substrate 1, wherein the substrate support 4 has a main body portion (central portion) and a supporting portion 4 (side portion) which is provided on the main body portion and is in contact with the substrate 1 (fig. 2B), and the supporting portion 11 (fig. 2B) is formed from a silicon platelike-member having a general thickness larger than the thickness of the substrate 1 (abstract). The main body portion of the substrate support 4 (fig. 2B) is made of silicon carbide (para. [0023]) and the supporting portion is formed from a silicon-plated-like member (para. {0021-0023}). However, Takehiro does not teach a specific range of thickness for the substrate support being not more than 10 mm, as claimed, and a substrate-facing face being coated with at least one film made from amorphous silicon oxide.

Yoshikawa discloses an analogous device having a substrate support 2 having a thickness of .08-1.25mm or 1.23-1.95mm (para. 0031] which is within the claimed range for preventing a slip ([0063]) .

Regarding to the thickness, it would have been obvious to one of ordinary skill in the art to use the substrate support teaching of Takehiro with a thickness dimension, as taught by Yoshikawa, for preventing a slip.

Regarding to the coated film, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the supporting portion of Takehiro as modified by Yoshikawa, with a coated layer made of amorphous SiO<sub>2</sub>, as taught by Satoshi, because it is known in the art that the SiO<sub>2</sub> layer provides protection from damage or diffusion of impurity to

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the layer underneath. Also, the coated layer helps to prevent surface resistance on contact in the device.

Regarding claim 20, Takehiro discloses a thermal treatment apparatus comprising a furnace (para. [0001]) for heat-treating a substrate 1 ( fig. 2B) and a substrate support 2, 4 (fig. 2B) for supporting the substrate 1, wherein the substrate support 2, 4 has a main body portion (central portion) and a supporting portion 4 (side portion) which is provided on the main body portion and is in contact with the substrate 1 (fig. 2B), and the supporting portion 4 (fig. 2B) is formed from a silicon platelike-member having a general thickness larger than the thickness of the substrate 1 (abstract). The main body portion 2 and the supporting portion 4 of the substrate support 4 (fig. 2B) are made of silicon carbide (para. [0023]) . However, Takehiro does not teach a specific range of thickness for the substrate support being not more than 10 mm, as claimed, and a substrate-facing face being coated with at least one film made from amorphous silicon oxide.

Yoshikawa discloses an analogous device having a substrate support 2 having a thickness of .08-1.25mm or 1.23-1.95mm (para. 0031] which is within the claimed range for preventing a slip ([0063]) .

Regarding to the thickness, it would have been obvious to one of ordinary skill in the art to use the substrate support teaching of Takehiro with a thickness dimension, as taught by Yoshikawa, for reducing material cost in making the substrate support.

Regarding to the coated film, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the supporting portion of Takehiro as modified by Yoshikawa, with a coated layer made of amorphous SiO<sub>2</sub>, as taught by Satoshi, because it is



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known in the art that the SiO<sub>2</sub> layer provides protection from damage or diffusion of impurity to the layer underneath. Also, the coated layer helps to prevent surface resistance on contact in the device.

As to claim 21, the main body portion and the supporting portion of the substrate support 4 (fig. 2B) are made of silicon carbide (para. [0023]) .

### ***Response to Arguments***

6. Applicant's arguments with respect to the rejected claims have been considered but are moot in view of the new ground(s) of rejection.

### **Conclusion**

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to (Vikki) Hoa B. Trinh whose telephone number is (571) 272-

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1719. The Examiner can normally be reached from Monday-Friday, 9:00 AM - 5:30 PM Eastern Time. If attempts to reach the examiner by telephone are unsuccessful, the Examiner's supervisor, Ms. Davienne Monbleau, can be reached at (571) 272-1945. The office fax number is 571-273-8300.

Any request for information regarding to the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Also, status information for published applications may be obtained from either Private PAIR or Public Pair. In addition, status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. If you have questions pertaining to the Private PAIR system, please contact the Electronic Business Center (EBC) at 866-217-9197 (toll free).

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Lastly, paper copies of cited U.S. patents and U.S. patent application publications have ceased to be mailed to applicants with Office actions since June 2004. Paper copies of foreign patents and non-patent literature will continue to be included with office actions. These cited U.S. patents and patent application publications are available for download via the Office's PAIR. As an alternate source, all U.S. patents and patent application publications are available on the USPTO web site ([www.uspto.gov](http://www.uspto.gov)), from the Office of Public Records and from commercial sources. Applicants are referred to the Electronic Business Center (EBC) at <http://www.uspto.gov/ebc/index.html> or 1-866-217-9197 for information on this policy.

Requests to restart a period for response due to a missing U.S. patent or patent application publications will not be granted.

/(Vikki) Hoa B Trinh/  
Examiner, Art Unit 2893

/Davienne Monbleau/  
Supervisory Patent Examiner, Art Unit 2893